



PATENTS

Attorney Docket No. TY-001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Gosuke Oshima et al.  
Application No. : 09/614,374 / Confirmation No. : 2254  
Filed : July 12, 2000  
For : ELECTRONIC DEVICE MANUFACTURING  
METHOD, ELECTRONIC DEVICE AND RESIN  
FILLING METHOD  
Group Art Unit : 2827  
Examiner : John B. Vigushin

Hon. Commissioner for Patents  
c/o P. O. Box 2327  
Arlington, VA 22202

TECHNOLOGY CENTER 2800

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REPLY TO OFFICE ACTION

Sir:

Responsive to the Office action dated March 13, 2002, applicants submit the following amendments and remarks:

AMENDMENTS

In the Claims

Please cancel claims 1-13, 18 and 22.

Please amend claims 14-17 and 19-21, and add new claims 23-30 as follows:

14. (Amended) An electronic device comprising;

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a substrate having first and second generally planar surfaces, wherein the first generally planar surface is parallel to the second generally planar surface;

one or more electronic parts mounted on the first generally planar surface;

a resin layer disposed to surround at least one of the one or more electronic parts; and

a plurality of terminal electrodes disposed only on the second generally planar surface and electrically coupled to the one or more electronic parts.

15. (Amended) The electronic device of Claim 14, further comprising an intermediate layer comprising an insulating elastic material interposed between the resin layer and the first generally planar surface.

16. (Amended) The electronic device of Claim 14 or Claim 15, wherein the substrate comprises a rectangular solid of a specified thickness.

17. (Amended) The electronic device of Claim 14 or Claim 15, wherein the resin layer comprises a rectangular solid of a specified thickness, the resin layer disposed over the first generally planar surface.

19. (Amended) The electronic device of Claim 14 or Claim 15, wherein the resin layer comprises a ferrite filler or a metal filler.

20. (Amended) The electronic device of Claim 14 or Claim 15, wherein the resin layer comprises at least one of the

following properties: insulation, heat resistance, fluid impermeability or chemical resistance.

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21. (Amended) The electronic device of Claim 14 or Claim 15, wherein the electronic device comprises at least one layer selected from the group consisting of: an electromagnetic field shielding layer, a heat-dissipating layer or a metal layer,

wherein the at least one layer is disposed on at least a specified region of the resin layer.

23. (New) An electronic device comprising;  
a substrate having first and second generally planar surfaces;

one or more electronic parts mounted on the first generally planar surface;

a resin layer disposed to surround at least one of the one or more electronic parts;

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an intermediate layer comprising an insulating elastic material interposed between the resin layer and the first generally planar surface; and

a plurality of terminal electrodes electrically coupled to the one or more electronic parts.

24. (New) The electronic device of Claim 23, wherein the substrate comprises a rectangular solid of a specified thickness.

25. (New) The electronic device of Claim 23, wherein the resin layer comprises a rectangular solid of a specified

thickness, the resin layer disposed over the first generally planar surface.

26. (New) The electronic device of Claim 23, wherein the resin layer comprises a plurality of resin side surfaces orthogonal to the first generally planar surface, the plurality of terminal electrodes embedded in the resin layer so that each of the plurality of terminal electrodes are disposed flush with one of the plurality of resin side surfaces.

27. (New) The electronic device of Claim 23, wherein the substrate further comprises a plurality of substrate side surfaces orthogonal to the first generally planar surface, wherein the plurality of terminal electrodes are embedded in the substrate so that each of the plurality of terminal electrodes are disposed flush with one of the plurality of substrate side surfaces.

28. (New) The electronic device of Claim 23, wherein the resin layer comprises a ferrite filler or a metal filler.

29. (New) The electronic device of Claim 23, wherein the resin layer comprises at least one of the following properties: insulation, heat resistance, fluid impermeability or chemical resistance.

30. (New) The electronic device of Claim 23, wherein the electronic device comprises at least one layer selected from the group consisting of: an electromagnetic field shielding layer, a heat-dissipating layer or a metal layer

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wherein the at least one layer is disposed on at least a specified region of the resin layer.

#### REMARKS

##### Summary of the Office Action

Claims 1-22 are pending in the present application.

Applicants' election of Group II, claims 14-21 has been acknowledged.

Claim 21 has been rejected under 35 U.S.C. §112, second paragraph, as being indefinite with respect to the limitation "said at least one layer".

Claims 14, 16-18, and 20 have been rejected under 35 U.S.C. §102(b) as being anticipated by Kazle, U.S. Patent No. 5,847,930, in view of Yoshizumi et al. ("Yoshizumi"), U.S. Patent No. 5,043,211, which was used as evidence for the assertion of inherency in Kazle.

Claim 19 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Kazle in view of Horiba et al. ("Horiba"), U.S. Patent No. 5,822,194 and Harada et al. ("Harada"), U.S. Patent No. 5,966,294.

Claim 21 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Kazle in view of Ichihara, U.S. Patent No. 5,455,384.

Claim 15 has been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### Summary of Applicants' Response

Applicants have amended claim 21 to recite the limitation "... wherein the electronic device comprises at least one layer selected from the group consisting of ...", thereby obviating the §112 rejection.

Applicants have rewritten claim 15 as new claim 23, and added new claims 24-30, which depend therefrom.

Applicants have amended claim 14 to further patentably distinguish the present invention, and cancelled claim 18 to comport with the amendments to claim 14.

Applicants have amended claims 15-20 for clarification purposes.

#### Applicants' Detailed Response

To obviate the 35 U.S.C. §112 rejection, applicants have amended claim 21 to recite that "the electronic device comprises at least one layer selected from the group consisting of: an electromagnetic field shielding layer, a heat-dissipating layer or a metal layer ...."

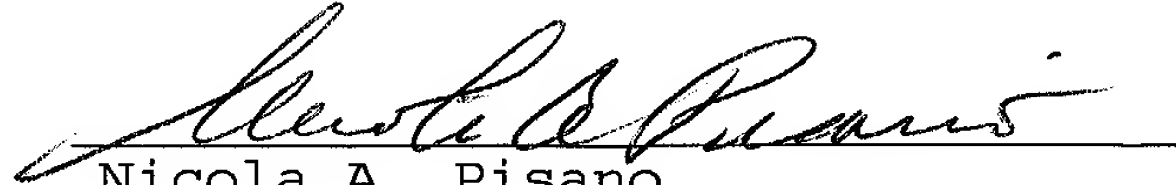
Applicants have rewritten claim 15, which has been identified as containing patentable subject matter, as new claim 23, and added new claims 24-30, which depend therefrom. New claims 24-25 and 28-30 are identical to original claims 16-17 and 19-21. New claims 26 and 27 clarify original claim 18. Specifically, new claim 26 reads upon the embodiment of FIGS. 11-12, described at page 23, line 5 to page 24, line 14. New claim 27 reads upon the embodiment of FIGS. 13-14 described at page 24, line 17 to page 25, line 32.

Applicants also have amended claim 14 to further distinguish the present invention. Amended claim 14 now recites that the terminal electrodes are disposed **only** on the surface of the substrate that is parallel to the surface upon which the electronic parts are disposed.

In contrast, none of the prior art cited in the office action describes such a characteristic. Kazle describes an electronic circuit module that comprises terminal electrodes that are embedded within the side surfaces of both a substrate and a resin layer (FIG. 1), or only within the resin layer (FIG. 8). Yoshizumi describes terminal electronic leads that are disposed on the side surfaces of an epoxy resin layer. Ichihara describes terminal electrodes that are formed on the side and top surfaces of a resin layer. Horiba and Harada teach nothing of relevance to the claimed terminal electrode configuration. None of the other references of record teach or suggest applicants' invention as now claimed.

Accordingly, applicants respectfully submit that the present invention is patentably distinguishable from the prior art of record, and thus is in condition for allowance.

Respectfully submitted,



Nicola A. Pisano

Reg. No. 34,408

Attorney for Applicants

FISH & NEAVE

Customer No. 1473

1251 Avenue of the Americas

New York, New York 10020-1104

Tel.: (650) 617-4018

Fax: (212) 596-9090

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